

CLAIMS

What is claimed is:

- 1 1. A method comprising:
 - 2 reserving a Quality of Service (QoS) resource pool a predetermined portion of
 - 3 available bandwidth between a first network device coupled in communication with a
 - 4 packet network and associated with a first user community and a second network
 - 5 device coupled in communication with the packet network and associated with a
 - 6 second user community for real-time communication sessions among users of the first
 - 7 user community and the second user community; and
 - 8 providing end-to-end application QoS between the first user community and
 - 9 the second user community by selectively admitting a plurality of real-time
 - 10 communication sessions between the first user community and the second user
 - 11 community based upon currently available resources associated with the QoS resource
 - 12 pool and multiplexing the plurality of real-time communication sessions over a
 - 13 reservation protocol session between the first network device and the second network
 - 14 device.
- 1 2. The method of claim 1, wherein said reserving a predetermined portion of available
- 2 bandwidth between a first network device associated with a first user community and
- 3 a second network device associated with a second user community includes pre-
- 4 allocating the reservation protocol session over a path through the packet network
- 5 between the first network device and the second network device.
- 1 3. The method of claim 2, wherein the reservation protocol session comprises a
- 2 Resource Reservation Protocol (RSVP) session.
- 1 4. The method of claim 3, wherein at least one of the plurality of real-time
- 2 communication sessions includes a H.323 session and a Real-time Transport Protocol
- 3 (RTP) session.

- 1 5. The method of claim 1, wherein the first user community and the second user
2 community comprise subscribers to a long distance carrier.
- 1 6. The method of claim 1, wherein the first user community and the second user
2 community comprise employees of an enterprise at a first geographic location and a
3 second geographic location, respectively.
- 1 7. The method of claim 1, wherein the packet network comprises the Internet.
- 1 8. The method of claim 1, wherein:
2 a first local network supporting the first user community comprises Internet
3 Protocol (IP) telephony products of a first vendor which are in communication with a
4 first IP private branch exchange (PBX) call management agent; and
5 a second local network supporting the second user community comprises IP
6 telephony products of a second vendor which are in communication with a second IP
7 PBX call management agent.
- 1 9. The method of claim 1, wherein the plurality of real-time communication sessions
2 comprise voice over IP (VoIP) calls carrying voice or voice-band data.

1 10. A method comprising:

2 establishing an aggregated reservation protocol session over a path between a
3 first device coupled to a public Internet Protocol (IP) network and a second device
4 coupled to the public IP network; and

5 providing end-to-end Quality of Service (QoS) on behalf of users of a
6 distributed voice over IP environment by (i) selectively admitting a plurality of VoIP
7 calls between those of the users associated with a first user community that access the
8 public IP network via the first device and those of the users associated with a second
9 user community that access the public IP network via the second device based on
10 resources associated with the aggregated reservation protocol session and a desired
11 level of service and (ii) multiplexing the plurality of VoIP calls onto the aggregated
12 reservation protocol session.

1 11. A method comprising:

2 establishing a Resource Reservation Protocol (RSVP) session between a first
3 network device and a second network device that are part of a geographically
4 distributed enterprise voice over Internet Protocol (VoIP) network;

5 receiving, at the first network device from a first local terminal, a request to
6 initiate a first VoIP call with a first remote terminal associated with the second
7 network device;

8 allocating a portion of pre-allocated resources associated with the RSVP
9 session to the first VoIP call between the first local terminal and the first remote
10 terminal;

11 receiving, at the first network device from a second local terminal, a request to
12 initiate a second VoIP call with a second remote terminal associated with the second
13 network device;

14 allocating a portion of the pre-allocated resources associated with the RSVP
15 session to the second VoIP call between the second local terminal and the second
16 remote terminal; and

17 providing a desired level of Quality of Service (QoS) to both the first VoIP call
18 and the second VoIP call by sharing the RSVP session between the first VoIP call and
19 the second VoIP call by multiplexing packets containing voice or voice-band data
20 associated with the first and second VoIP calls onto the RSVP session.

- 1 12. The method of claim 11, further comprising:
2 transmitting packets from the first local terminal and first remote terminal by
3 forming an encapsulated packet at the first network device that includes tag
4 information to allow the second network device to determine the packets are intended
5 for the first remote terminal; and
6 removing the tag information at the second network device prior to forwarding
7 the packets to the first remote terminal.
- 1 13. The method of claim 12, wherein the tag information includes the IP address of the
2 first local terminal.
- 1 14. The method of claim 12, wherein the tag information includes the IP address of the
2 first remote terminal.
- 1 15. The method of claim 12, wherein the tag information includes a packet type indicator
2 that specifies how to further identify a subprocess within the first remote terminal.
- 1 16. The method of claim 11 wherein the first local terminal and the first remote terminal
2 comprise IP phones.
- 1 17. The method of claim 11 wherein the first local terminal and the first remote terminal
2 comprise computer systems running an Internet telephony application.

1 18. A media aggregation manager comprising:

2 a resource manager to establish a reservation protocol session with one or
3 more other media aggregation managers prior to establishment of any application
4 sessions that share resources associated with the reservation protocol and to
5 subsequently allocate and deallocate the resources in response to application session
6 establishment requests and application session termination requests, respectively;

7 an admission control manager coupled to the resource manager, the admission
8 control manager to provide admission control for application flows based upon
9 availability of the resources as indicated by the resource manager;

10 a media multiplexor coupled to the admission control manager, the media
11 multiplexor to tag media packets received from local application/endpoints that are
12 associated with admitted application flows and to transmit the tagged media packets
13 over the reservation protocol session;

14 a media demultiplexor to forward media packets received from remote
15 application/endpoints to the local application/endpoints based upon tags appended by
16 a media multiplexor of the one or more other media aggregation managers; and

17 a signaling gateway to perform signaling/media translation, if necessary,
18 among a first signaling protocol employed by a first Voice over Internet Protocol
19 (VoIP) environment in which the media aggregation manager is to operate and one or
20 more signaling protocols employed by VoIP environments in which the one or more
21 other media aggregation managers operate.